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DE 003942795 A

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INT CL⁷ B60R 9/04 9/048 9/058 13/04

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(54) Abstract Title

Covering strip for roof rack channel

(57) A covering strip (1) for a channel (2) in the roof of a vehicle for the fitting of a roof rack comprises a pivotable flap (5) with a hook part (6) co-operable with a stop (8) provided in the channel (2). The hook part may latch onto the stop for opening and closing the flap by means of one or more elastically deformable barbs (18,19) co-operable with a groove in (7) the stop. Alternatively, the hook part may be in the form of a slide member (11 in figure 3a) which latches in and out of the stop. The flap is designed such that it automatically opens by pushing down on the flap above the stop such that the hook disengages from the groove and a biased spring pulls it open.

Fig. 2a

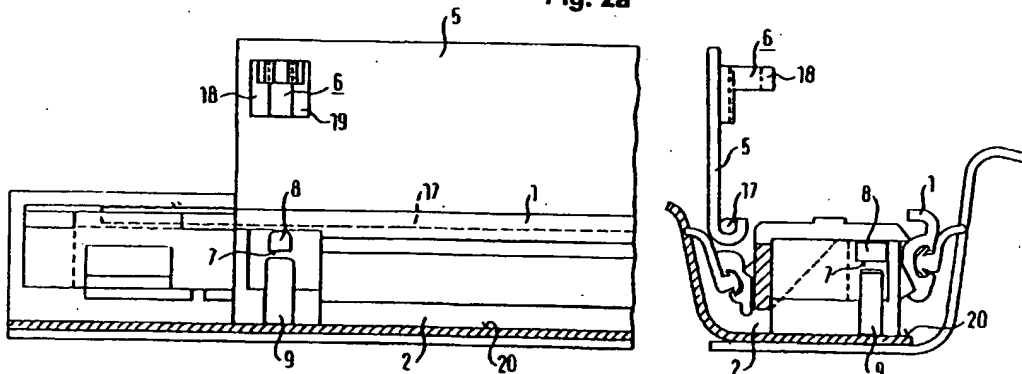


Fig. 1

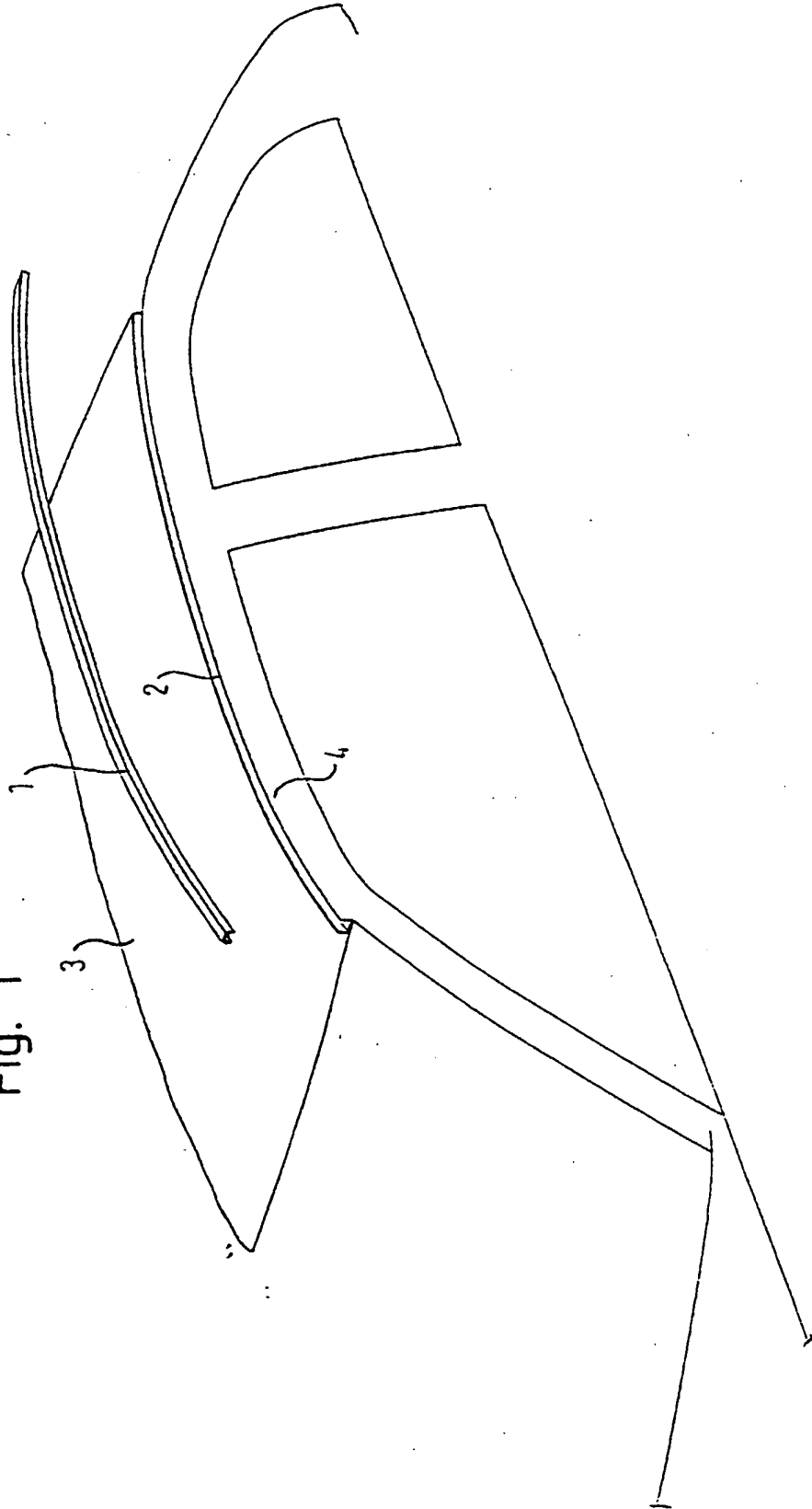


Fig. 2a

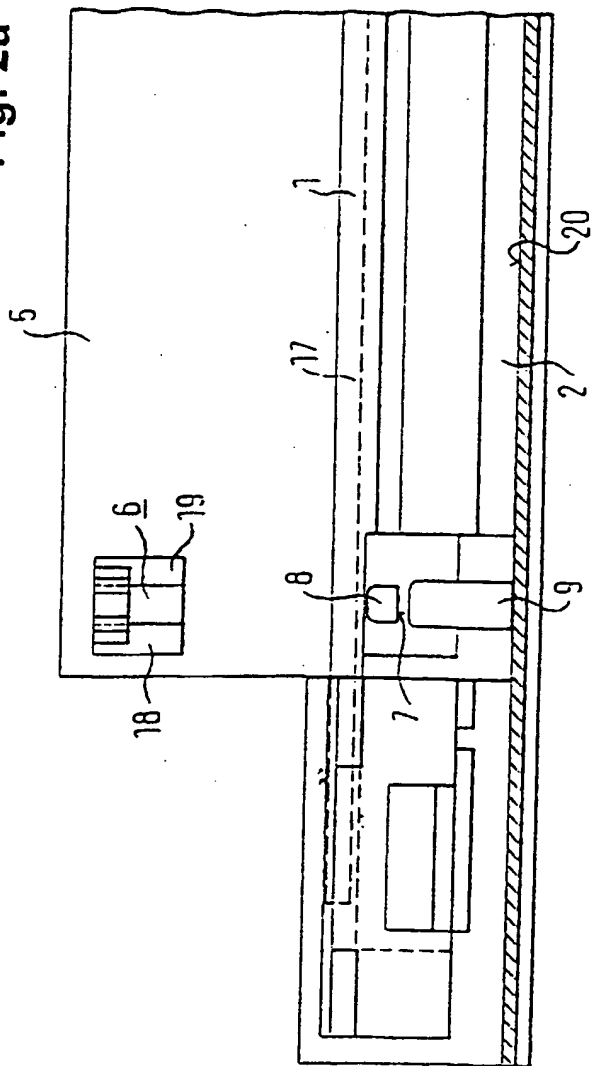


Fig. 2b

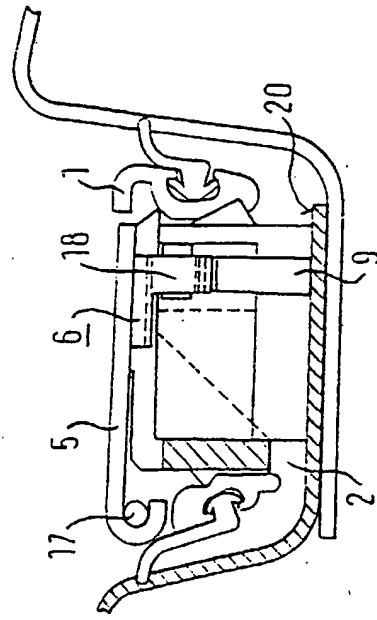
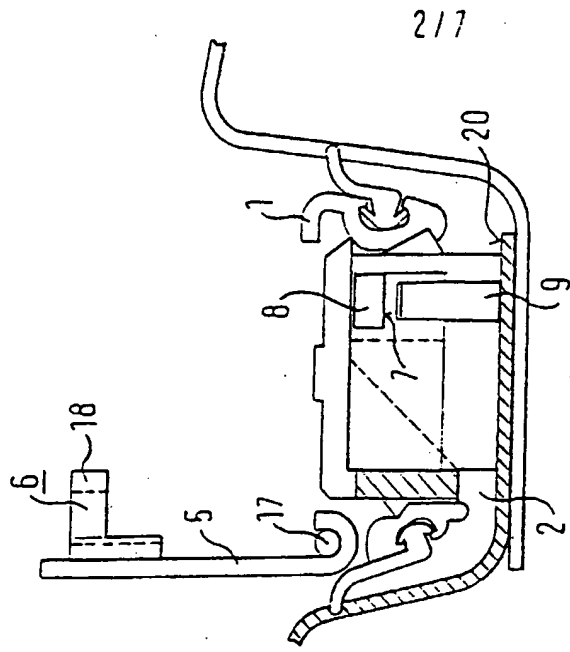
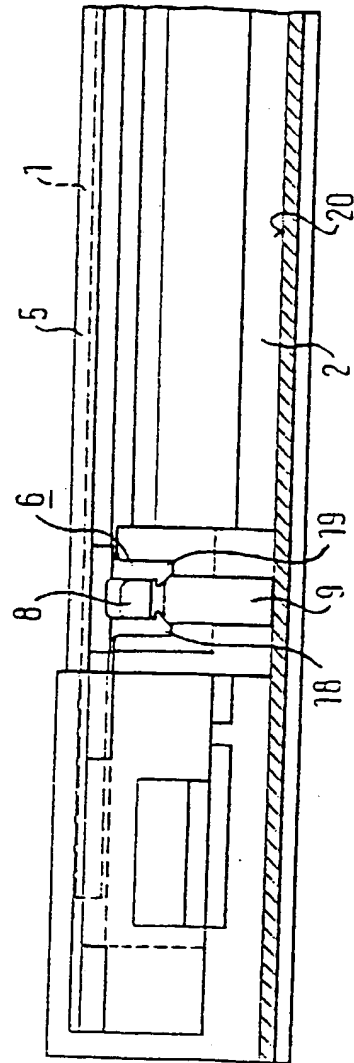


Fig. 2c

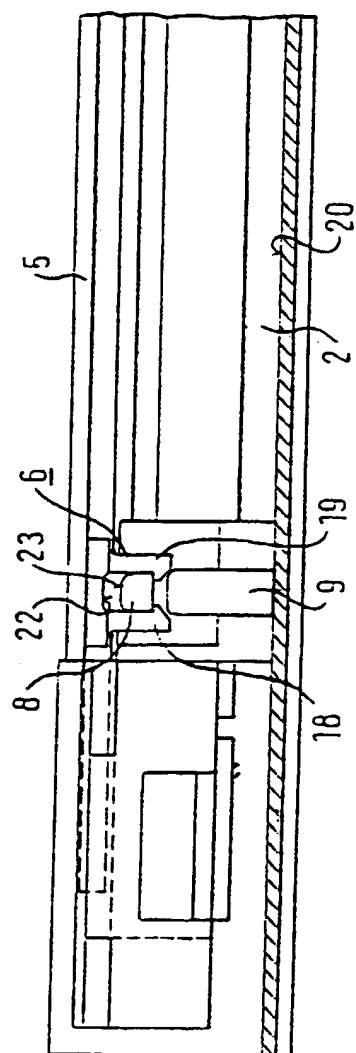
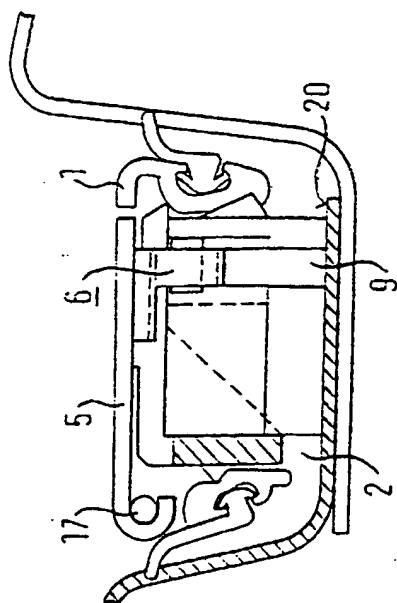


Fig. 2d

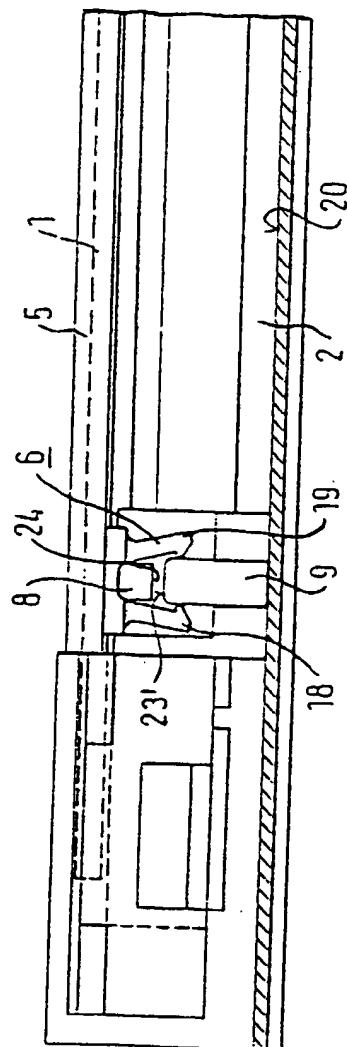
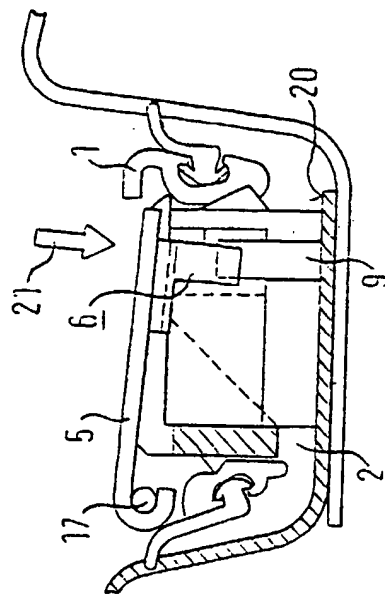
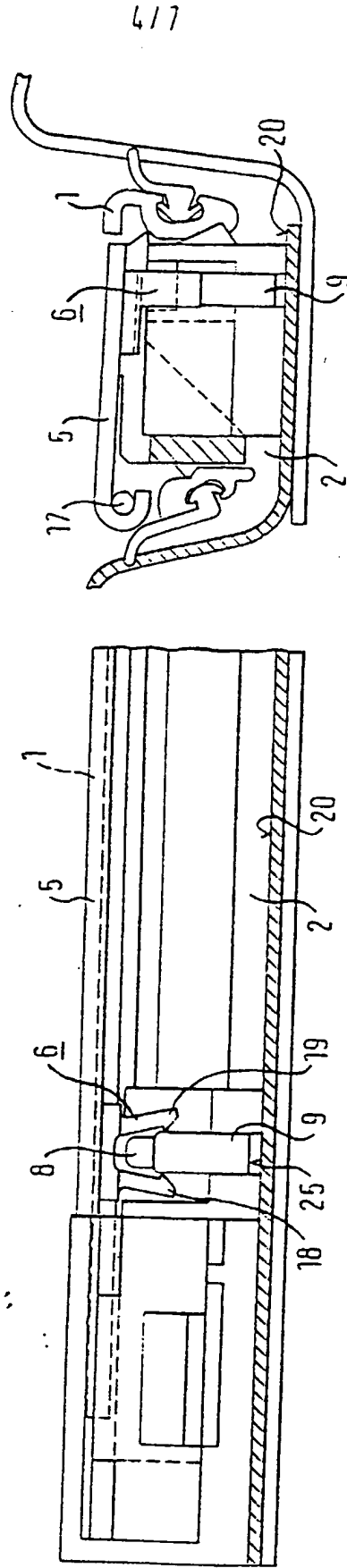


Fig. 2e



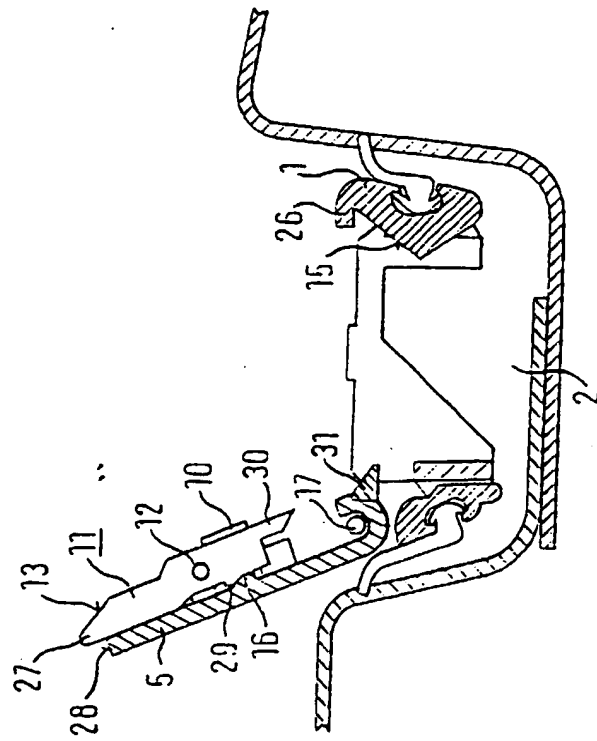


Fig. 3a

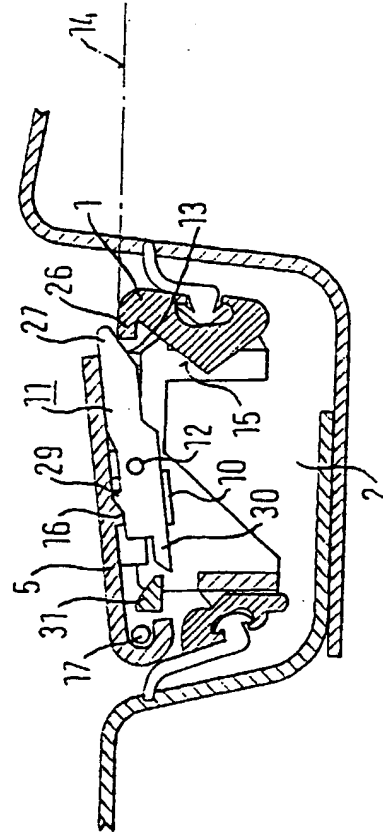


Fig. 3b

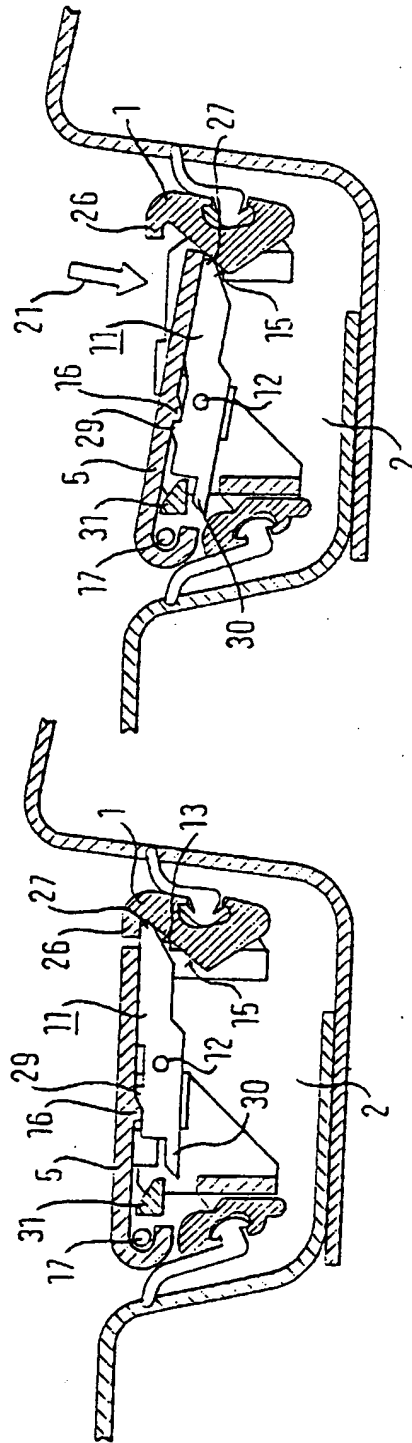


Fig. 3c

Fig. 3d

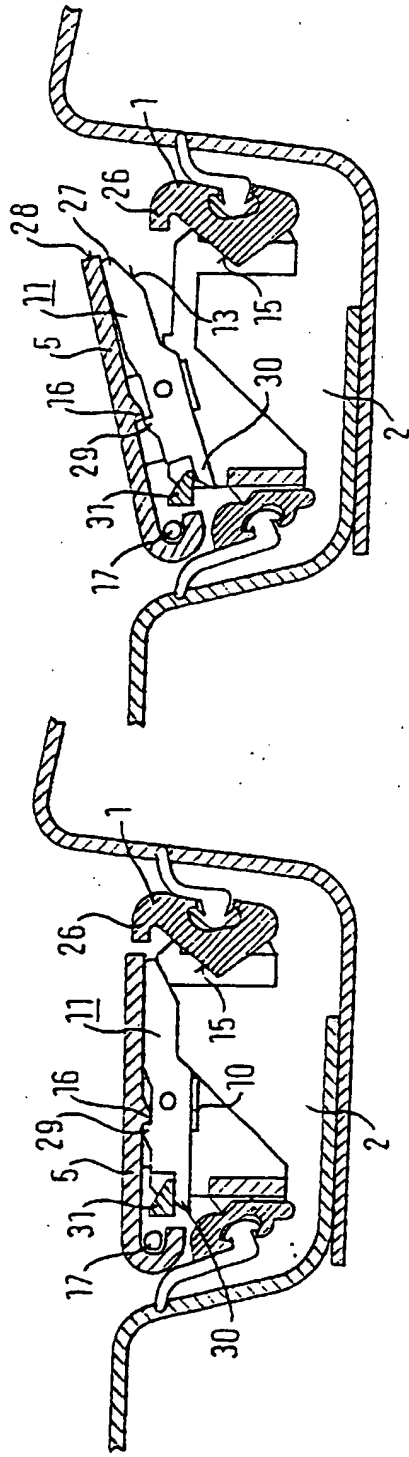


Fig. 3e

Fig. 3f

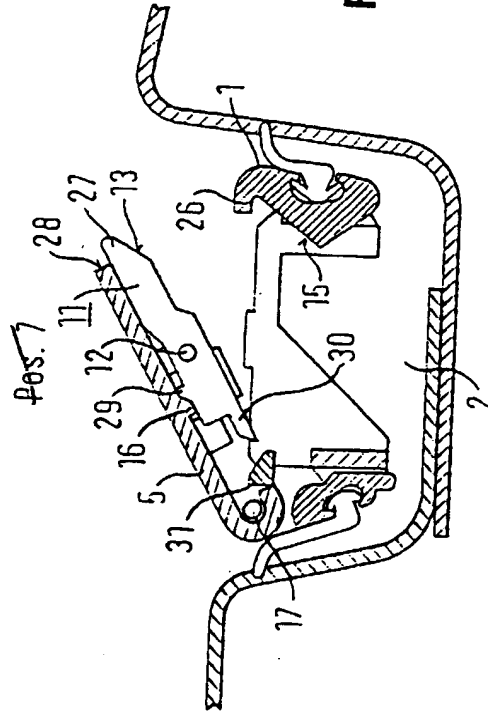


Fig. 3g

Covering strip for a longitudinal groove of a vehicle part such as a vehicle roof

5 The invention relates to a covering strip for a longitudinal groove of a vehicle part, for example a vehicle roof, having at least one opening which can be closed by a pivotable flap.

10 Two longitudinal grooves or channels are usually provided or embedded in a motor vehicle roof or in another part of a motor vehicle, for example in the region of the boot (in particular in the case of roadsters and similar vehicles). These longitudinal grooves or channels can be used for different purposes, in particular for
15 accommodating and securing the supporting feet of a roof rack. The supporting feet grip through openings in the covering strip. If the roof rack is removed, the openings can be closed by flaps such as pivotable flaps.

20 Covering strips having openings which can be closed by pivotable flaps are already known. According to DE 39 42 795 A1, the flap is retained in its open or closed position by arresting clips. The arresting clips have cam-shaped end sections which engage in corresponding
25 latching recesses on the hinged cover.

DE 42 13 464 C1 discloses a solution in which the hinged cover has an extension on which are provided latching projections which interact with a spring arm, which is
30 provided in the groove, in such a manner that the hinged cover is retained in its open position and in its closing position.

DE 42 37 158 A1 discloses an embodiment in which securing
35 tongues are provided in the groove, the said securing tongues bearing under prestress against contact surfaces which are provided on the flap, and in this manner they

retain the flap in the open position or in the closing position.

However, the previously known flaps can only be opened
5 with difficulty. Even aids are sometimes required.

Taking this as the starting point, the invention solves the technical problem of simplifying the opening of the flaps of a covering strip of the type specified in the
10 opening paragraph above.

This is achieved by a covering strip for a groove of a vehicle having at least one opening which can be closed by a pivotable flap, characterized in that the flap is
15 provided with a hook part, and in that a stop and an opening part for the hook part are provided in the groove. By means of the stop and an opening part of the hook part, the flap can be opened by a simple fingertip actuation. However, this does not entail limitations in
20 the design. Also, the necessary structural space does not have to be enlarged. The invention can be implemented in such a manner that even in extreme situations, in particular when ice has formed, the flap can be forcibly opened without destroying the mechanism.
25 Opening by a fingertip actuation is perceived to be substantially more convenient and user friendly. Nevertheless, a covering strip according to the invention can be of robust design and can be produced cost effectively. The covering strips may be located in the
30 roof region of a vehicle. However, they may also be provided in other vehicle parts, in particular in the boot region.

It is possible to realize the invention (and also the
35 advantageous developments described below) the other way

around (kinematically), i.e. to provide the hook part in the groove and to provide the flap with a stop and an opening part for the hook part.

- 5 Advantageous developments of the invention are the subject matter of the subclaims.

The hook part is preferably elastic. The elasticity can be achieved by the material of the hook part and by the
10 design thereof, for example by the hook part being produced from plastic or another elastic material and by the hook or that part of the hook part which latches in some other manner and/or grips behind the stop being arranged at an elastically deflectable location.

- 15 However, the elasticity of the hook part may also be achieved by spring loading.

The hook part can preferably be brought into a latching position and into a disengaging position. In the
20 latching position, the hook part interacts with the stop for the hook part. In this position, the hook part latches together with the stop. In the disengaging position, the hook part can be moved past the stop.

- 25 The hook part is preferably in its rest position in the latching position. The elasticity or spring force thus acts in such a manner that in the absence of external influences, the hook part takes up the latching position. The elasticity or spring force accordingly brings the
30 hook part automatically from the disengaging position into the latching position.

The stop preferably latches the hook part in place. This can take place in particular by the stop being gripped
35 from behind by the hook part.

In a further advantageous development the hook part can be brought by the opening part into a position moving past the stop (without colliding with the stop). The hook part can preferably be secured or latched in this position. The position of the hook part in which it moves past the stop can be the disengaging position thereof. The hook part can be retained in the position in which it moves past the stop, (the disengaging position) by a part keeping it open, for example a latching connection. Furthermore, there can be a release part by means of which this latching connection can be released again.

According to the invention the flap can be opened by a fingertip actuation. It can be closed again by a pressure actuation or further fingertip actuation. Furthermore, the flap can be fitted in a manner such that it is externally flush with respect to the roof strip. This reduces the risk of injury or risk of an accident and results in an attractive appearance. The opening of the flap can be assisted by a spring. There is furthermore achieved the advantage that the mechanism for opening and locking the flap can be fitted substantially below the roof strip where it is not visible and is protected against external influences.

In operation, the flap can be opened by a fingertip actuation. In the closing position, the hook part of the flap is retained by the stop. Pressing on the flap (fingertip actuation) causes the hook part to be brought by an opening part into a disengaging position or a position in which it moves past the stop. The hook part is retained in this position and, during the opening of the flap, which can be assisted by a spring force, the hook part is retained in this position.

If the flap has been pivoted from the open position into the closing position, the hook part is retained by the stop. The hook part can be brought via an elastic deflection into a latching position in which it bears
5 against the stop or grips behind the stop or is secured in another manner by the stop.

In a further advantageous development the hook part contains a barb.

10

In certain applications, it may be advantageous if there are two barbs which preferably lie opposite each other. The barbs are preferably configured in a manner such that they are elastically deflectable.

15

The stop may be designed as a retaining peg.

The opening part is preferably configured as a pin. The pin can be mounted displaceably, preferably in a
20 direction towards the retaining peg. The pin may be preloaded in a direction away from the retaining peg, for example by means of the spring, but also by means of its own weight, in particular if the pin is fitted vertically (in a vertical direction of movement).

25

Advantageously the hook part is configured as a slide. The slide is preferably spring-loaded.

The opening part may contain an oblique plane. The
30 oblique plane is preferably arranged in the region of the stop. The slope of the oblique plane is preferably configured in such a manner that when the flap is rotated from the closing position in a direction counter to the opening position, the slide or the tip of the slide is
35 moved away from the stop, i.e. in particular moved towards the axis of rotation of the flap.

The hook part can preferably be latched to the flap in the disengaging position. The hook part can be secured in the disengaging position by this latching connection.

5 In this manner, when the flap is opened the hook part can be moved past the stop. A lever or another disengaging part is preferably provided for disengaging the hook part and the flap. By this means, the latching connection between the hook part and the flap can be released when

10 the slide has been moved past the stop during opening of the flap.

Exemplary embodiments of the invention are explained in detail below with reference to the attached drawing, in

15 which

Fig. 1 shows a roof of a motor vehicle in a perspective illustration,

Figs. 2a Show a first exemplary embodiment
to 2e (solution 1) in each of five positions, and

Figs. 3a Show a second exemplary embodiment
To 3g (solution 2) in each of seven positions.

The motor vehicle roof illustrated in Fig. 1 has two longitudinal grooves (also referred to as roof channels) 2 running in the longitudinal direction of the vehicle,

20 only one of these is illustrated in the drawing. The roof channels or longitudinal grooves 2 are produced when the roof 3 and side wall 4 are joined. The roof strip or covering strip 1 has the task of covering the roof channel or the longitudinal groove 2. Two openings (not

25 illustrated in Fig. 1) are provided in the roof strip or covering strip 1 and make it possible for a roof rack

to be fastened to securing means in the roof channel or in the longitudinal groove 2. These openings are covered by flaps, slides or clips. In the context of the present invention, the covering is undertaken by a pivotable flap.
5

Figs. 2a to 2e show a first exemplary embodiment in five positions, a cross section (in each case on the right in the illustration of the drawing) and a longitudinal section (in each case on the left in the illustration of the drawing) being reproduced in each of these Figures.
10 In the groove 2, a cover 5 is mounted in a manner such that it can pivot about an axis 17 running in the longitudinal direction of the groove. The covering strip 1 is interrupted in the region of the pivotable flap 5.
15

At its end lying opposite the pivot axis 17, the pivotable flap 5 is provided, on one side, with a hook part 6 which is situated on the lower side of the flap 5.
20 The hook part contains two barbs 18, 19 which lie opposite each other (see Figs. 2b to 2e, longitudinal section). The barbs 18, 19 are elastically deflectable (see, in particular, Figs. 2e and 2f, longitudinal section). However, in certain applications, it may be advantageous if one of the two barbs is emitted, so that
25 there is only one elastically deflectable barb.

A stop which is configured as a retaining peg 8 is provided in the groove 2. The said stop lies below the horizontal plane which encloses the pivot axis 17 and the upper end of the covering strip 1.
30

Furthermore, there is an opening part, which is configured as a pin 9, in the groove 2. The pin 9 is mounted in a manner such that it can be displaced in the vertical direction. In the basic position (Figs. 2a to
35

2d), it rests on the base 20 of the groove 2 (in the lower position).

In Fig. 2a, the open position of the flap 5 is shown.

5 The flap 5 protrudes essentially vertically upwards. When the flap is closed (Fig. 2b), i.e. is pivoted downwards about the axis 17, the hook part 6 (which may also be referred to as a clip) strikes against the pin 8.

The hook part 6 is expanded by the sloping surfaces 10 which are provided on the lower side of the hook part 6 or of the barbs 18, 19 and run towards each other in a roof-shaped manner. The barbs 18, 19 are reflected elastically outwards. In the position according to pos. 2, the barbs 18, 19 are pivoted back inwards into 15 their initial position on account of their own elasticity. The barbs 18, 19 grip behind the lower stop surface 7 of the stop which is designed as retaining peg 8. In this position, the lower sloping surfaces of the barbs 18, 19 strike against the upper edges of the 20 opening part, which is designed as a pin 9. The user feels a slight rise in force which indicates to him that the flap 5 has been pressed down sufficiently.

If the user now lets go of the pivotable flap 5, the 25 flap 5 is moved by the force of a spring (not illustrated in the drawing) slightly in an opposite direction (anticlockwise in the illustration of the cross section) until it takes up the position shown in Fig. 2c in which the barbs 18, 19 bear against the lower stop surface 7 of 30 the stop which is designed as a retaining peg 8. The closing position has been reached. The surface of the flap 5 is aligned with the adjacent edge of the covering strip 1. The hook part (the clip) 6 is latched to the retaining peg 8.

35

In order to open it, the flap 5 is pressed down at its

end lying opposite the pivot axis 17, as indicated by the arrow 21 in the cross section of Fig. 2d. The flap (the cover) 5 is "overpressed". When the flap (the cover) 5 is overpressed, the hook part (the clip) 6 and its barbs 18, 19 are expanded by the pin 9. The lower, roof-shaped sloping surfaces of the barbs 18, 19 slide outwards along the upper edges of the pin 9 until the position shown in the longitudinal section of Fig. 2d is reached in which the inner tips of the barbs 18, 19 bear against the outer surfaces of the pin 9. In this position, the base surface 22 of the hook part 6, which surface lies between the barbs 18, 19, strikes against the upper end surface 23 of the retaining peg 8 (Fig. 2d, longitudinal section).

15 If the flap 5 is now let go of, it is pivoted upwards (anticlockwise in the illustration of the cross section) by the force of the abovementioned spring (not illustrated in the drawing). During this movement, the pin 9 together with the hook part (the clip) 6 is pulled upwards, as shown in Fig. 2c. On account of their elasticity, the barbs 18, 19 exert a force, which is directed inwards towards each other, which is transmitted through the tips of the barbs 18, 19 by friction to the outer surface of the pin 9 and carries along the pin 9 upwards during movement of the flap 5 until the upper end surface 23' of the pin 9 strikes against the lower end surface 24 of the retaining peg 8, as shown in Fig. 2e. The lower end surface 25 of the pin 9 is now raised up from the base 20 of the groove 2 (in the upper position).

During the further course of the pivoting movement of the flap 5 upwards, the inwardly directed points of the barbs 18, 19 slide upwards along the outer surface of the pin 9. They then continue to slide upwards along the outer surface of the retaining peg 8, i.e. pass the stop

surface 7 of the retaining peg 8. The flap 5 again reaches the open position shown in Fig. 2a.

5 Figs. 3a to 3g show a second embodiment (solution 2) of the invention in seven positions. In the cross-sectional drawings of the individual positions, components which coincide with those from the first embodiment or correspond thereto are provided with the same reference numbers in each case.

10

In the second embodiment, the hook part is configured as a slide 11. The slide 11 is guided in a longitudinally displaceable manner (in the plane of the slide 5) on the lower side of the pivotable cover 5. Furthermore, the slide 5 is preloaded by a spring 12 in the direction of that end of the slide 5 which faces away from the pivot axis 17.

20 The stop 26 for the slide 11 is formed by that end of the cover strip 1 which faces the flap 5. An oblique plane 15 which is part of the opening part adjoins this stop 26.

In Fig. 3a, the flap 5 is shown in the open position. 25 The point 27 of the slide 11 protrudes over the end 28 of the flap 5.

When the flap 5 is pivoted about the axis 17 (clockwise in the illustration of the positions), the lower sloping surface 13 provided at the tip 27 of the slide 11 comes into contact with the stop 26 (Fig. 3b). During the further course of the pivoting movement, the slide 11 moves beyond the plane 14 of the roof strip. In the course of this movement, the lower sloping surface 13 of the slide 11 slides along the stop 26, so that the slide 11 is moved inwards (to the left in the cross-sectional 35

illustration of Fig. 3b) counter to the force of the spring 12.

When the cover 5 has reached the position which is shown
5 in Fig. 3c and in which it is aligned with the stop 26,
the slide 11 is moved outwards again (to the right in the
cross-sectional illustration of Fig. 3c) by the spring
12. It grips behind the stop 26 and latches to the
latter. The flap 5 can be let go of. It is in the
10 closing position.

In order to open the flap 5, the latter is pressed at its
end lying opposite the pivot axis 17, as indicated by the
arrow 21. During this "overpressing", the tip 27 of the
15 slide 11 slides along the oblique plane 15. The
inclination of the oblique plane 15 on the covering strip
1 is selected in such a manner that the distance from the
pivot axis 17 is reduced with increasing pivoting inwards
(clockwise in the illustration of Fig. 3d), so that the
20 slide 11 is moved inwards (to the left in the
illustration of Fig. 3d) counter to the force of the
spring 12 until the position shown in Fig. 3d is reached
in which the front end 28 of the flap 5 protrudes
slightly beyond the tip 27 of the slide 11. In this
25 position, a projection 29 on that side of the slide 11
which faces the flap 5 grips behind a latching lug 16 on
the lower side of the flap 5. By means of the projection
29 and the latching lug 16, the slide 11 is latched to
the flap 5 in the disengaging position shown in Fig. 3d.
30 As a result of the fact that the front end 28 of the flap
5 strikes on the oblique plane 15 (Fig. 3d), the user
feels an increase in pressure which indicates to him that
sufficient pressure has been exerted in the direction of
the arrow 21.

35

The user can then let go of flap 5. This spring 10

causes the flap 5, including the slide 11 which is latched to it in the disengaging position, to move upwards (anticlockwise in the illustration of Fig. 3e). Since the slide 11 is latched in the disengaging position, in which it can move past the stop 26, by the projection 29 and the latching lug 16, the opening movement is not hindered. The slide 11 is in its latching position, and the flap 5 can therefore pivot freely through the roof-strip opening. The flap 5 springs open.

After the flap 5, including the slide 11, has moved past the stop 26, the latching connection between the flap 5 in the slide 11 is automatically released again (Fig. 3f). For this purpose, a lever 31 is provided in the groove 2, which lever is situated next to the pivot axis 17 and is arranged fixed to the housing (stationary). During the movement of the slide 11 inwards, which movement is triggered by the oblique plane 15 (Fig. 3d), an elongated portion 30 of the slide 11 grips below the lever 15. During the opening movement of the flap 5 (movement from the Fig. 3e position to the Fig. 3f position) the lever 15 exerts on the slide 11 a leverage by means of which the projection 29 is moved away from the latching lug 16. This is achieved in that the lever lies between the pivot axis 17 and the stop 26. The slide 11 is lifted up from the lower side of the flap 5 in the region of the projection 29, with the result that the latching connection between the projection 29 and latching lug 16 is released (Fig. 3f).

During further opening of the flap (Fig. 3g) the slide is then moved outwards again by the force of the spring 12. It takes up the basic position which is shown in pos. 7 and pos. 1 and in which the tip 27 protrudes over the end 28 of the flap 5. When the flap 5 is swung upwards, the

slide 11 is therefore in front again. The flap 5 then again reaches the open position shown in Fig. 3a.

Claims

1. A covering strip (1) for a groove (2) of a vehicle
5 (3) having at least one opening which can be closed
by a pivotable flap (5), characterized in that the
flap (5) is provided with a hook part (6, 11), and
in that a stop (8, 26) and an opening part (9, 15)
for the hook part (6, 11) are provided in the groove
(2).
- 10 2. A covering strip according to Claim 1, characterized
in that the hook part (6, 11) is elastic.
- 15 3. A covering strip according to Claim 1 or 2,
characterized in that the hook part (6, 11) can be
brought into a latching position (Fig. 2a, Fig. 2b,
Fig. 2c; Fig. 3a, Fig. 3b, Fig. 3c, Fig. 3g) and
into a disengaging position (Fig. 2a, Fig. 2e;
20 Fig. 3d, Fig. 3e, Fig. 3f).
4. A covering strip according to any one of the
preceding claims, characterized in that the stop (8,
26) latches the hook part (6, 11) in place.
- 25 5. A covering strip according to any one of the
preceding claims, characterized in that the hook
part (6, 11) can be brought by the opening part (9,
15) into a position moving past the stop (8, 26).
- 30 6. A covering strip according to any one of the
preceding claims, characterized in that the hook
part (6) contains a barb (18, 19).
- 35 7. A covering strip according to one of Claims 1 to 5,
characterized in that the hook part (6) contains two
barbs (18, 19).

8. A covering strip according to claim 7, characterized in that the two barbs (18, 19) lie opposite each other.
- 5 9. Covering strip according to Claim 7 or 8, characterized in that the stop is designed as a retaining peg (8).
- 10 10. Covering strip according to any one of Claims 7 to 9, characterized in that the opening part is configured at the pin (9).
- 15 11. A covering strip according to Claim 10, characterized in that the pin (9) is mounted displaceably.
- 20 12. A covering strip according to any one of Claims 1 to 5, characterized in that the hook part is configured as a slide (11).
- 25 13. A covering strip according to Claim 12, characterized in that the slide (11) is spring-loaded (12).
- 30 14. A covering strip according to Claim 12 or 13, characterized in that the opening part contains an oblique plane (15).
- 35 15. A covering strip according to any one of Claims 12 to 14, characterized in that the hook part (11) can be latched (29, 16) to the flap (5) in the disengaging position (Fig. 3d, Fig. 3e, Fig. 3f).
16. A covering strip according to Claim 15, characterized by a lever (31) for disengaging the hook part (11) from the flap (5).

17. A covering strip according to any one of claims 1 to 16, characterized in that it is positioned for closing a longitudinal groove of the vehicle roof.

5 18. A covering strip for a longitudinal groove in a vehicle roof, constructed and adapted to operate substantially as hereinbefore described with reference to, and as illustrated in, Figures 2a to 2e, or Figures 3a to 3g, of the accompanying
10 drawings.



INVESTOR IN PEOPLE

Application No: GB 0122416.1
Claims searched: 1-18

Examiner: Heather Scott
Date of search: 28 November 2001

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): B7B; B7J

Int Cl (Ed.7): B60R: 9/04; 9/048; 9/058; 13/04

Other: Online: EPODOC, WPI, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	EP0827870 (PEUGEOT) see figures 7-9	1
X	DE3942795 (ILHAN) see figure 2	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.